

EOC Notes 8-28-08  
Methomyl Unit Incident

11:00 PM Symthe Steve  
Rick Clay  
Cliff Samples  
Walt Martin  
Saul Bill

11:20 P. Fred Keeling  
Doug Nye  
Mike Wey  
Joe Davenport  
Derrick Fauber (Praxair)

11:32 Candra Ingram  
Phil Heyliger  
Andy Altman  
Tom Hudson  
Kathy George

11:33 Chris Brisendine  
Mike Shawler  
Jeff Blatt  
Shawn Highlander

11:35 Gordon Smith  
Vinay Devgon

11:39 Connie Stewart

11:43 Cindi Lester  
Mike Curry

11:45 Mike Carter

External Attendance: Sterling Lewis – SFM, Shawn Alderman –SFM/RRT, Mark Jarrett- Nitro  
F.D. / RRT U/L1,

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CSB00770

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	6:00 P.M. to 6:00 A.M. Shift C - IV Steven Breck (0) Steven Breck, 08/28/2008 20:59 (General) Draft  6:00 P.M. to 6:00 A.M.  Shift C - IV
	Steven Breck, U.S. Security Officer (Main Gate)  Craig Hurt, BCS Security Officer in Charge  MARSEC LEVEL 1
	All FWP off PSI = 126.6  All Cameras Working Except #6  Trouble alrms (Yellow) Alrm Cab. Siren 6 Polyox  CO2 No. 2 P.H. BL - 271 Gen. C02 - 241  Smoke/Heat Det. Sub 4 bldg 8786
6:00 P.M.	Shift Change and vehicle inspections during shift
6:30 P.M.	Checked Plant site w/ cameras
7:15 P.M.	Progressive elect closing off D-Street from Polyox to Bldg. 70 (Rusty) to do elect. Work, notified Mike Cox and he will tell Ed, also notified Craig.
7:30 P.M.	Called MIC Unit to open gate for Praxair N2 Tanker, Jerry Said he would take care of it
7:50 P.M.	Craig had me page Tom Meredith, Bill Varian and Chris Hines to call M.G. and to call Craig.
8:30 P.M.	D-Street opened back up per/Rusty, notified Mike Cox and Craig
10:25 P.M.	Trains west to east per/Warren
10:38 P.M.	Emergency alarm at Larvin Unit, F543, G5498, F542
10:45 P.M.	EOC Activation requested, Craig activated EOC and A Shift and B Shift requested
10:50 P.M.	Opened 20 - Slide gate and free wheeled turnstiles

10:59 P.M.	Notified agencies Metro, (Paul) WV Rehab no answer, WVSC (Tracy) Cat. Ref. (Tyler)
11:00 P.M.	Warren said the trains were clear
11:04	Clay, Sample, Smythe
11:05	Residue Treater enter (Connie Taylor)
11:06	1 in ambulance, 1 unaccounted for
11:07	Pressure shot up
11:07	IC
11:10	Nick being contacted (by Wey)
11:12	Jeff Schneider given samples Number
11:13	Flames under control (per Wey)
	Note Tom Hudson and 1 other showed up @ S. Charleston.
11:14	Recap! Injury 1 transportation uncertain burn Assistance is on scene. S side of MOM Treater is gone, fire truck suppressing flames
11:17	Fumes drifting W, access OK from S.
11:18	W Martin enter. (Evans not called yet)
11:19	Sterling Lewis [REDACTED] wants a call.
11:20	Menello says Metro has been notified
11:21	Minor secondary explosion (Menello)
11:23	Wey in, says Crosby, will contact Evans
11:24	SIP recommended for St. Albans, Nitro
11:30 P.M.	Notified agencies for alarm update, Metro (Paul) WV Rehab no answer, WVSC (Tracy) Cat Ref. no answer
11:30	Request Vieto Bomb Squad [REDACTED]
11:30	Vieto from Bomb Squad [REDACTED] W. Martin to call

11:30	Candia Ingram, T. Hudson in, Mike Curry badge not working
11:36	Sterling Lewis says Regional Resp. Team standing by
11:38	D. Nye says no vapors - steam from firewalls
11:40	Phone call should be sent to missing persons home (RC to Tom H)
11:41	DEP has been notified (G. Smith)
11:42	M. Curry sent to 911 center as liaison
11:43	Question (K. George) if breathing air to plant is ok
11:44	METRO wants interface to go to Shawnee Park (Nye)
11:46	53 # pressure on plant breathing air.
11:48	Individual transported to hospital
11:54	Recommend block access to rd W of Larvin in case of vapor cloud.
11:55	Staged with field crew in area to locate missing individual
12:00 am	Unaccounted ee's family notified
12:00 am	Transported ee @ Chas General - per Teresa degree burns
12:00	Summary - fire explosion @ MOM residue treater 1 transported / 1 missing search underway
12:01	Traffic on 12 is clear. Off gasses moving upward
12:01	Praxair is SIP
12:01	2nd request for rep be sent to Shawnee Park. - Keeling & Nye dispatched
12:03	Nye, Keeling on way to General
12:03	RC 'Family members need to call Hospital
12:05 A.M.	Notified Agencies Metro (Shawna) WV Rehab no answer, WVSC (Tracy), Cat. Ref (James)
12:05	Hospitalized ee's family notified asked to go to CAMC Gen Bill Saul also going to hospital

12:05	Oxley family notified ee transfer burn CTR Cabell Hunt.
12:06	West Area needs to be S'
12:09	I-64 continued to be closed
12:09	EOC to Menello over phone – requests to open interstate
12:12	Keep interstate closed. More activity in LV unit (not dying down)
12:13	West of Larvin under toxic vapor cloud – SIP in west end of plant requested
12:15 A.M.	Announced all person west of Larvin Unit to shelter in place
12:15	RR person on site experiencing rash & itching Fred requested he call [REDACTED] to request medical attention
12:16	Medical director said if we've got people that need transported he will ensure hospital knows per F. Keeling.
12:21	1 ee in med with heat related probs
12:25	Request for MSDS @ Main Gate
12:25	Shawnee Park wants MSDS faxed to them (visiting @ front gate)  <u>Or given - MIBK</u>
12:26	Transferred Oxley to Pittsburgh Burn Center
12:29	Teresa communicating with CAMC that only 1 individual is
12:29	Water flow probs reported but monitors are adequate
12:30	Water delivery problems @ unit. Adequate flow from local monitor Metro wants MIBK MSDS faxed to them. If low community threat, lift road blocks on Rt. 25 and I-64 (per Doug).
12:35	Update both systems shutdown @ unit  Monitoring sys pressure  Circulating pumps down
12:37	Both systems shut down from Control Room. Randomly shutting breakers down as they can. MIC tank warming some. Pumps shut down. Monitoring pressure of MIC tank. Residue treater exploded. – fire still coming from treater. Requested for Menello to get replacement radio. Odors → picking up MIBK odors. Not strong. Shut down air moved to

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	Control Rm. Bldg. Looks like fire is contained.
12:38 A.M.	Notified Agencies Metro (Shawna) WV Rehab no answer, WVSC (Tracy) Cat. Ref. (James)
12:40	EE is in transport to Cabell Hunt Burn Ctr. Bill Saul & Davenport going to Hunt.
12:42	Water pressure adequate
12:42	Fire localized but not controlled
12:43	Oxley enroute to Huntington Burn center.
12:44	Menello update – water pressure sufficient. Fire is localized but not under control. Green light to open interstate at this time.
12:45	Recommendation to Metro to open I-64
12:46	No need for additional Emerg. Squad @ this time
12:46	Notified Mike Curry to notify to open roadways.
12:47	M. Curry reported from 911 center 2nd person reported to hospital – needed decon.
12:47	Keep roads closed.
12:49	Channel 8 – Bob Aaron New unit back in service @ Larvin from a plant employee. No one willing to speak to us at this point. Some one from Bayer coming out to speak to us. One injured / one missing. Dusk mask not much of a help. At Shawnee Park. Shelter – St. Albans, Nitro, Institute, South Charleston call [REDACTED]
12:51	Rudy Raines Spoke to residents – uncertain Dunbar area – turned on air conditioners DOT says roads open in 1 hour No evacuations, just SIP Rt. 25, 60 Goff, I 64 – closed others
12:54	New unit online but no confirmation

	Elizabeth Waiting on Information
12:55	EE sent to hosp was not decon HCN, Sulfide, Hexane, MIBK, Methomyl Residue (Majority)
	Illegible
12:56	Oxley was not decontaminated prior – Methomyl, MIBK, Hexane, DMDS, DMS, CAN, Methomyl residues majority  Request for Kent Carper of chemicals in vicinity (list above)
12:59	Fire remains uncontrolled. Trying to determine fuel to fire. 4 active lines and nozzles. Center of structure on fire. All feeds are off.
1:00	Kan Sheff. Dept contacted METRO & said a person reported to CAMC Gen & said he was BCS EE – No name. Teresa asked to call Hosp.
1:02	Visually the winds are moving due North. Recommend to notify Cross Lanes to SIP.  Oxley being transported to Pittsburgh – via ground transportation.  Metro wants to know this and inventory in immediate area  High TOC and pH @ West Outfall. WWTU is okay.  Reportedly Bayer employee walked into General Hospital. Do not know ID.
1:04	Asked to ID storage tks in immediate area  No bulk stg. Tks in immed area
1:06	Wey to talk to Media. Paula to assist
1:07	Residue treater near MIBK Hexane column. Moved  North → #1 #2 XL (MIBK, Hexane, MOM)  East → MIC Stripping Still (not sure of involvement)  Scrubbers (Caustic & Water)  Brine Stripper presently involved  Bulk storage tanks not involved  Explosion mangled structure – remaining sprinklers are operating

1:10 A.M.	Notified Agencies Metro (Shawna) WV Rehab no answer, WVSC (Tracy) Cat. Ref. (James)
1:10	Nurse @ hospital in room with Oxley Burn on arms and legs – 3rd degree. Going to Huntington
1:10	Another ee being trans to Med. Dept – firefighter
1:12	Still see flames via video. 1 more individual → dispensary for heat/stress BCS firefighter – sending 2 cases cold drinks
1:15	Start initiating foam on the fire
1:16	Recap – “having P on residue treater and then it spiked.”
1:18	Is structure being cooled N, S, 2 units in mid fog Localized flames now
1:20	Foam going on-tricky with all water going on. Dispersion straight up 1000'
1:20	Illegible
1:20	SIP can be lifted in St. Albans
1:21	Will continue with closure of I-64
1:21	Interstate open, Rt. 25 close
1:22	SIP – SC, Dunbar, Jefferson, St. Albans, Nitro, Cross Lanes, Institute
1:23	RC said keep roadways closed
1:25	Another BC See to Med. Dept – Heat Fatigue
1:26	No – leave it closed
1:27	3rd BCS to Dispensary – heat stress
1:30	Rick – recommendation on SIP/ continue to hold @ current status SIP
1:32	Mike Wey met w/Media & made official statement

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1:33	Maintain status quo on SIP
1:34	Line interview with Wey
1:35	Continue to address small flash fire
1:36	Request to dispatch IH monitoring in Cross Lanes
1:36	Continuing to fight a small flash in center of structure
1:38	Tony Menello requesting IH monitoring along westbound I-64 on way to monitoring at Cross Lanes
1:40	Doug Nye dispatched to C.L.
1:40 A.M.	Announced shelter in place all clear except Larvin Unit.
1:41	Advised fire under control
1:42	SIP lifted for community & plant except Larvin. County official notified Metro of lift of SIP
1:44	D. Nye → C.L. for IH monitoring
1:45 A.M.	Notified Agencies Metro (746) WV Rehab no answer, WVSC (Tracy) Cat. Ref. (James)
1:45	TM Dispersion shifted straight up and W (75 psi steam and hot steel – FIRE OUT)  Lift I 64/R25 restriction
1:46	Lift SIP & open roads. Only SIP is Larvin → Chris called security to effect.
1:47	Teresa says she has 2 heat & 1 twisted knee
1:50	KM says Google Alert says 1 fatality
1:50	Concern – need to sweep area to determine if ee can be accounted for – per Tony M. prefer to wait until more situation more secure
1:52	No readings detected from IH monitoring in Cross Lanes area
1:55	Metro requesting e-mail request from BCS to lift SIP
1:58	R. Buckley's family called in
2:00	Oxley being transported

	<p>Connie → Withrow</p> <p>2 FF heat stress</p> <p>All maint. people found</p> <p>All outside agencies have been answered</p> <p>Must preserve scene</p> <p>All but LAR SIP lifted. Rail closed</p> <p>Shift change – do you provide EAP to LAR/MOM' ees</p> <p>Face to face communication</p> <p>Emergency Team on search</p>
2:00	Both ee's in Med Dept are OK – heat stress
2:01	Railroad line still closed
2:01	Fire out
2:04	<p>RC requested Tony Menello now secure the scene</p> <p>TM told to ensure preserve scene</p>
2:05	<p>Communication concern – Dow suggest shift change EAP interface</p> <p>Paula – communication to site</p>
2:06	Offer to reduce h/c in EOC.
2:06	<p>K. Myers suggest Dow rep be allowed to leave – basically all clear</p> <p>Fire extinguish for about 5 minutes (2:00 am)</p>
2:07	Tom Dover in
2:08	DEP notified incident is over
2:10	F. Keeling informed (@ Shawnee park) Fire Out
2:10	<p>EOC concern when to let mutual aid go at front gate, etc. – Mike Cox</p> <p>Call – want to keep those at scene active – per Tony M.</p> <p>Allow aid at front gate and external to start stand down</p>

2:11	TM & Mike Cox to consider mutual aid TM: inside stay, release Main Gate group (Fetty)
2:12	TV showing SIPs clear, roads open
2:14	TM says still using copious amounts of water – 3 monitors still on
2:14	Check Status Tony M. plenty of water to cool steel – 171 structure flood/out fall problems
2:15	RR still has engine in idle at 10th St. Check to see if can come in shut down – ok to come in main gate (certain) route E str to 10 go south and exit same way
2:17	High & Low risk sumps overflowing
2:18	Railroad wants to shutoff running engine. OK if they come W on E to 10th, S → engine
2:22	KC Emer. Serv. Maintain connection during search
2:24	NC arrives
3:00 A.M.	Notified Agencies Metro (Matt) WV Rehab no answer, WVSC (Laura) Cat. Ref. no answer
3:15	EAP expected on site immediately from St. Albans.
3:18	Report - missing employee found – fatality Candi to call Connie
3:20	DEP visitors at gate - Brad to p/u
3:26	Kai Van Laak to be called by NC – busy Pat Ragan in the air now
3:33	DEP arrived
3:33	Nick asked for extra counseling to be brought in asap
3:35	MOM was coming up smooth, just a few CE problems
3:35 A.M.	Notified Agencies Metro (759) WV Rehab no answer, WVSC (Laura) Cat. Ref. (James)

3:36	Tom Dover returned from Shawnee media – no one to talk to
3:37	TD spoke to G Coffey. (BM, VD, SS, CI, KM, TD, MC, HT in EOC)
3:48	WSAZ called, TD answered
3:52	Roddy Conrad asked to come in
3:53	G. Smith says Inter. Stinky, talk about Larvin bin obs by Mike Cox.
3:57	M. Wey requested KM to preserve wind speed, video tape
3:58	Video shows vapors blowing horizontal – 4.7 mph
4:01	Suggestion to localize alarm so ECC can drive
4:03	TD questioned whether any inspection had been conducted for shock/impact
4:04	Carrier called to work on –10 refrig
4:07	Jeff Wentz's wife called to see if he's OK.
4:08	Brice LeCorre talking to N.C. Mick Kirby
4:11	WSAZ again → PD
4:20	NC – WM left EOC → go to unit (██████████ Cliff Sample) about to leave
4:24	Cathy George came in and said "same shift, 15 years, 2 guys"  Feedback – get food & water asap. Old sec. guy in Larvin some guys should talk before they go home.
4:35	WSAZ again Chris Wolzen. Praxair – moving from old BuOH stopped by SP1 and were taken in where do truck drivers go at night?
4:41	Wind at 2.2 to NW.
4:45	RC arrived
4:55	Media for Tom again
4:55	
741 (5:00)	RC to Larvin Control
5:00 A.M.	Emergency at Larvin under control alarm is still in effect

5:02	WSAZ news announced 1 death. Barry Withrow named by brother. 1 flown to Pittsburg. Last time we heard from officials was 2:30. Joe Machin will be on.
5:12	RC → SS → WM to Maingate please get exit 50 open.
5:10	Candi → B2
5:14	NC in. Manchin will be here.
5:21	1 vent still alight.
5:25	TD/NC → Fire Station to meet Manchin.
5:30	Channel 3 calls.
5:31	"Governor is now on the scene"
5:32 A.M.	Alarm all clear except the Larvin unit was nounced
5:34	All clear for entire site except for Larvin area.
5:35	Connie back with Chaplain of family. Sterling Lewis said 1 deceased. DEP said no further damage.
	Roadway in front of MD – suggestion to close street. Traffic running
05:30	WSAZ "MIBK" burns well, no hazard to coming outdoors. Jimmy Jeanett state emergency . . . 1/4 miles 5" hose, difficult, saw twisted metal, Inst. Tyler Mt., depts. Responded. Std procedure to close roads.  WVSU will hold class today.
5:40 A.M.	Closed 20 A slide gate and secured all turnstyles
5:45	CHAPLAIN (exFlexols) Connie was great. Mike Family strong, 11 year old woke up & told. Where is he? Assign a family liaison – follow up. Information top priority.  Has a card to share can held/debrief. Make sure you communicate where Barry is. Meat & cheese tray.
5:52	Is appropriate
6:00 A.M.	Shift Change
6:35	Manchin speaking  Roddy "10 sec rupture disk release before 'it' blew" quote from Byron

	Bowman
6:50	Body has been moved. "Family must be notified" "Where is Ted Stewart someone needs to take care of family, 11 year old.
6:52	Nick on TV. Devastated.
8-29-08	Brand new vessel.
RC/SS/VD	Op said he pumped some residue in. No circ going on (no cooling) Applied heat. Blew. (Byron said 10-sec PRV). Supposed to start with MIBK – was not, first feed was residue-opinion anyway
7:28	TV WCHS [REDACTED] call for damage
07:42	Present: - NC, VD, SS, PK, CI, KM, RC, MC, MW, CS, WM  Deal with media and "guests". Interviews at noon. Molnar, Buckner, Evans 10:30. Expecting OSHA (Wey). Welter wants copy of PHA TG – option for units to stand down – must use CF to consume MIC. What about adjacent unit security. Steam plant needs to shut 1 more boiler. Candra family contact. Need a personal assistant.  TG/RC – Data gathering (DCS and run sheets)  MW – OSHA. RC – samples preserve.
8:15	MW – left to meet with OSHA guys.  Cindy for Barry's family.  Wells Fargo for Bill's ""  Family first.  (TG spoke to [REDACTED] NTSB).
8:28	Meeting finished
	Critique-  Walt Praxair – truck pulled off employee in cab – power house took in to SIP- ? what do truck drivers do in event EOC is IP  Walt – Concern to contractors SIP 507- what about if not close to 507?

**From:** Vorderbrueggen, John  
**To:** mike.wey@  
**Cc:** Sciallo, Lucy  
**Subject:** Outstanding document requests  
**Date:** Thursday, December 18, 2008 7:37:35 AM  
**Importance:** High

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Mike,

Thanks for the latest document submittal. We have updated the list of outstanding requests and have identified the following delinquent submittals. Please submit these documents to the CSB not later than December 29, or provide specific explanation for any further delay or non-submittal.

**BC D03 014** - Design specifications and calculations for the protective cover or blast mat that surrounds the MIC tank located immediately south of the C-2565 residue treater (the response letter for BC-D10-006, MIC safeguards, indicated that these items will be submitted to the CSB)

**BC D07 010** - Methomyl process solvent run checklist that was completed prior to start-up and created by Tim Gilfilen, referenced in 9/16/2008 interview.

**BC D09 004** - Video camera footage recorded on the Methomyl/Larvin unit camera that was disabled before the incident on August 28th 2008. This response should include four hours of recorded video prior to the time it was disabled. Also include all documentation associated with disabling this camera e.g., the person who disconnected camera, date and time of disconnection, purpose, and authorizations.

**BC D09 005** - All photographs, physical evidence, and documented conclusions on the as-found open-closed status of the residue treater cooler (C-2575) inlet/outlet isolation valve (E-2575) . Include photographs of an exemplar valve (same make, model, size) with the handle installed and removed. Clearly show the valve stem open-closed orientation for comparison with the photos of the cooler, attached piping, and valve(s) before the cooler was removed from the debris.

**BC D09 006** - For the 2576-1C steam control valve and the two adjacent block valves recovered from the debris: remove the block valves from the piping and provide photographs of the block valve end ports sufficient to record the open-closed status. These valves should be retained in an evidence preservation area until further notice.

Thanks for your prompt attention and response,

John

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## **Transcript of comments by Nick Crosby**

**October 8, 2008**

Thank you Walter, My name is Nick Crosby and I am the Site leader at the Bayer CropScience Institute site and I am responsible for the 700 folks that work regularly on that site; of which 500 are permanent Bayer CropScience employees.

I certainly welcome the opportunity to be here this evening. We really appreciate the leadership that NICS and the CIC have provided.

I'd also like to thank Dale Petry here, the director of the Kanawha County Office of Emergency Services.

Thank you all for attending. It's very important that we have the opportunity to be able to communicate with our residents, our neighbors and the community and certainly tonight gives us the opportunity to hear your concerns, answer your questions, and address the issues that you may raise.

I want to start by saying I am truly sorry for the incident that occurred on the 28<sup>th</sup> of August. It was a tragic event, sadly we lost the life of one of our Bayer family at the Institute site. We have another of our family members who lies seriously ill with burns in the hospital in Pittsburgh.

So we're going to talk about some things and some concerns that folks may have tonight. The one thing that we will not forget is our hearts and our thoughts and our prayers are with the people that have been tragically impacted by this terrible event.

We do recognize the concerns amongst the community and certainly I acknowledge the problems that occurred with emergency communications and will talk about that a little more detail.

The one thing I want to make clear right from the start of this discussion is with respect to the incident itself it is important to understand the community was never ever at risk as a result of this incident.

Our off site emergency response was first class. The incident commander on site followed the response priorities. For those of you that are in the business of emergency response, you know there is a three-part process here.

The first objective, the primary objective is to protect the health and welfare of the public and employees on the site.

The second objective is to protect the environment.

And lastly, our last objective is to protect our assets.

The incident commander that night made the initial assessment on the incident and he concluded that it was an industrial fire. We had an incident in our methanol unit a fire was ensuing and products were fueling that fire. Materials were fueling the fire.

As an industrial fire, the thing to do in those situations is to allow that fire to burn. But because it was a fire, the fuels in that fire were being burned and were being destroyed. And so the incident commander decided that the best step to take was there was no immediate need to shelter in place that evening.

We had a fire, it was contained and it was under control. I want to recognize the public fire department support of our emergency squad that night.

We have an absolutely fabulous emergency response team on the Institute Site. They're extremely well trained they're very professional.

That night a number of the fire departments around the area were able to assist us. In fact, two of those departments, the Institute Volunteer Fire Department and that's led by Andre Higginbotham here, and the Tyler Mountain Volunteer Fire Department actually came on to site and assisted our emergency crew in dealing with the incident that night.

Because it was an industrial fire and because we were allowing it to burn, we later became concerned that the heat from that fire was in fact compromising another part of the plant. We had some product in some hoppers and we were concerned the heat might affect that product that was in those hoppers and cause it to be compromised.

Later in the evening the incident commander actually called for a precautionary shelter in place and made the recommendation because he was concerned about the potential decomposition and he wanted to make sure the community was safe.

In addition to the incident commander, we also carried out a fence line monitoring of our site. We have automatic instrumentation on the edges of our site, on the fringes of our site where we're able to detect if harmful chemicals are actually leaving our site.

And that night we detected no harmful chemicals were leaving our site in addition one of the volunteer fire departments provided personnel who basically worked around the fringe or the edges of the incident itself monitoring for harmful chemicals and they found none because of the fire.

So there were no exposures to our employees on site and I think that's an important point to remember. And there were no exposures to anybody off site and that too is a very important point to remember.

What I appreciated was the good coordination of the onsite cooperation between emergency response and our personnel. The way that they dealt with that fire was first class.

So let me explain a few of the details of what happened that night.

We had an incident in our methomyl unit. We had a unit that basically cleans up solvents before they are sent to our power house for incineration. There was a decomposition took place and there was an overpressure in a piece of equipment we call the residue treater and that overpressure resulted in an explosion and fire.

MIC was not involved in that incident. MIC is used in our methomyl process. In fact its use is four stages upstream of where our residue treater process is. Our MIC system is fitted with multiple safeguards and I'm pleased to be able to tell you that on the night in question, those safeguards worked and they were effective. They did their job. They worked perfectly.

While we had a good response outside, our communications fell short of expectations. This incident was best categorized as two pieces. The first is the internal piece which is the way in which we actually fight the fire and bring it under control to make sure we keep the community safe. And we did an exemplary job with the people that attended that night.

The second piece, which is an important part, is the way in which we communicate outside of the site with the agencies that are able to help us so that they in turn are able to provide information to the public. But unfortunately our performance fell short of our high standards that we expected of ourselves that evening.

We believed that we communicated to Metro 911. We believed that we sent information about the incident. But subsequently, we discovered that we had not and we deeply regret that.

We've made improvements to put that right and those improvements are already in place. What we've done so far is designated a site security leader to make the initial and follow up calls to Metro 911. That is a specific role that is assigned to an individual.

We've committed to provide an increased level of detail about an incident on property to Metro 911. Previously we've worked off defined protocols we've changed those protocols to enhance that information.

We're committed to build upon our level of detail as more information becomes available, clearly informing Metro 911 of any potential impact to the community.

Finally, because we all need to use the Metro 911 telephone system, and that is a normal method of communication; we've already supplied Metro radios to the key site staff at

the Institute Site in case the 911 system is logjammed or congested or inoperable we now have the ability to communicate directly with the Metro Operations Center.

In addition, we've confirmed the cell phone numbers of key site contacts and all of us are pleased to say it has been discussed with the full cooperation of Dale—Dale we thank you for participating and really engaging in that dialog.

I'd like to point out that we are 100 percent committed as Bayer CropScience to active dialog in the community. Immediately following the incident we started dialog with our key community contacts and our neighbors. Within days of the incident we had a meeting on site with Dr. Hazo Carter and his leadership team here at the West Virginia State University.

We spoke with Michael Meadows the assistant state director of the Rehabilitation Center. We've met with the Dunbar, Nitro and St. Albans mayors and chiefs. We've spoken to nearby businesses. We've had individual conversations with concerned citizens here in the community.

We attended the Community Improvement Council meeting on the 24<sup>th</sup> of September and spoke with the individuals there assembled. We place a lot of value on that meeting. That meeting was set up many years ago and provides a very critical forum from which we are able to have dialog with key community members, leaders and stakeholders and we really value that opportunity being presented to us.

We've got tonight's forum and we value participation in this forum and I'll be happy to take your questions at a later time as Walter said, once we've had a chance to talk through.

We certainly value the long term commitment to the Community Improvement Council to an ongoing dialog with the various parties.

As far as emergency communications are concerned we believe everybody- all parties have a stake in ensuring emergency communications are both effective and efficient.

As I said we've already met with Metro 911 and we're working with the Kanawha Putnam Emergency Planning Committee and we're ready to take those recommendations and put those in to our emergency plan so it truly reflects what we need to be doing here on site to provide the best possible assurances to the community

As far as investigations are concerned we've been cooperating fully with the agencies that have visited our site. There are several agencies, but to name three, we've been working with the Chemical Safety Board, we've been working with OSHA and we've been working with the West Virginia Department of Environmental Protection.

We will not resume operations in our methomyl unit until we understand the cause and ensure that we've taken steps to eliminate those causes so that there's no recurrence of the problems that occurred on that night.

We have our own Bayer CropScience internal experts conducting our own investigation. In situations of this type there's very rarely a single cause to these incidents. Usually there's multiple causes.

We understand some of those causes but we don't understand all of those causes and we need to complete our studies on all aspects of the incident before we can fully understand what has happened and that work is in progress.

But we will not be restarting our methomyl unit until we understand those causes and have taken steps to prevent a recurrence.

So, in summary, I sincerely apologize to the people in the community and the people in this room for the incident that occurred at the Bayer CropScience Institute Site on August 28.

We fully support and count on the Metro 911 system to help in the event of an incident such as that.

We value the role of the CIC Community Improvement Council and NICS in bringing all the stakeholders here tonight so that we can have a dialog. I appreciate and I understand the community needs to know what has happened and they need to be sure that improvements are in place.

As I stated earlier, and just so we can be sure, just remember, the improvements that have already been put in to place are the following: we've designated the role to a site security leader in the event of an incident to make the initial and the follow up Metro 911 calls and has a prime accountability for that role. That role will provide increasing level of detail about the incident promptly to Metro 911. We're going to build upon that level of detail as more information becomes available. We're going to clearly inform Metro 911 of any potential impacts to the community and the stakeholders of this community.

And we've already supplied metro radios to our key site staff in case the 911 phone lines are inoperable, congested or really just to give us a second line of defense.

We've all seen safe operations that allow communities to have peace of mind that they deserve. Bayer CropScience is committed to be a good, honest, solid, communicative community citizen. Bayer is committed to doing that. I'm committed to do that. We want to be seen as a good citizen in this community here in Institute. We want to continue to bring value and opportunity to the people that live in this valley. So I thank you all for coming here tonight. I thank you for taking the time to listen to me and certainly I will take

questions later and I'd just like to thank you for taking the time here, to hear what I have to say. Thank you very much.

**Warner, Chris**

---

**From:** Warner, Chris  
**Sent:** Wednesday, February 18, 2009 2:22 PM  
**To:** 'rgomibar [REDACTED]'  
**Subject:** BCS

Bob- Charleston area newspapers quoted the site manager, Nick Crosby as saying "MIC was not involved in the incident." I believe Bayer made a similar assertion in the meeting last week. However, our preliminary findings from the investigation of the incident have identified the following:

- MIC is a feedstock to the Methomyl unit, and some unit equipment was heavily damaged in the incident.
- The sudden rupture of the residue treater and/or compromised piping in the unit most likely released Methomyl into the intense solvent fueled fire.
- (BCS) MSDS' and other literature about Methomyl decomposition state that MIC is a byproduct of Methomyl decomposition.

Therefore, we would like BCS to clarify their position to the CSB on the "involvement of MIC":

Was any piping or equipment containing any quantity of MIC compromised during the explosion and subsequent fire?

Was MIC liberated from the thermal decomposition of Methomyl? Was this MIC released to the atmosphere? If not, why not?

Why did BCS state that air monitoring data for MIC were "not available"? When will these data be produced to the CSB?

Thanks for your assistance.

3/16/2009

# McDermott Will & Emery

Boston Brussels Chicago Düsseldorf Houston London Los Angeles Miami Munich  
New York Orange County Rome San Diego Silicon Valley Washington, D.C.

Strategic alliance with MWE China Law Offices (Shanghai)

Robert C. Gombar, P.C.  
Attorney at Law  
rgombar [REDACTED]  
[REDACTED]

February 20, 2009

**BY ELECTRONIC MAIL (Chris.Warner [REDACTED])**

## **SENSITIVE SECURITY INFORMATION**

Christopher W. Warner, Esq.  
General Counsel  
U. S. Chemical Safety & Hazard Investigation Board  
2175 K Street, NW  
Suite [REDACTED]  
Washington, DC 20037

**Re: Bayer CropScience**

Dear Chris:

This responds to your e-mail to me dated February 18, 2009, regarding Bayer CropScience ("BCS").

Before getting to your questions, please permit me to make some constructive (hopefully) comments regarding the preliminary findings listed in your e-mail.

## **PRELIMINARY FINDINGS**

### **First Bullet Point**

For the sake of this discussion, BCS will assume that the two independent clauses in the first bullet point are essentially correct. The juxtaposition of the two clauses, however, may (and likely will) be read by some as "unit equipment [containing MIC] was heavily damaged . . . ." I am confident that such a reading was not the intent of placing the two clauses in the same sentence. If the CSB is planning to use the sentence in this first bullet point as it appears in your e-mail, BCS suggests that you consider breaking the two independent clauses into two separate bullet points so that the erroneous reading noted here will be somewhat less likely.

## **SENSITIVE SECURITY INFORMATION**

### **Second Bullet Point**

BCS believes that the substance of this bullet point is essentially correct. We find the use of the word "compromised" with respect to piping in the unit, however, potentially ambiguous given the structure of the entire sentence. The CSB uses "compromised" in this bullet point as well as the word "rupture" joined by the all purpose conjunctive-disjunctive "and/or." The default interpretation of "and/or" is the disjunctive "or." The sentence, as written, therefore, must be interpreted to read as follows: "The sudden rupture of the residue treater [or] compromised piping in the unit most likely released Methomyl into the intense solvent fueled fire." As such, the sentence conveys the idea of a loss of containment from both the residue treater and unit piping. Please understand that we are discussing this point only because you also use the word "compromised" in one of your questions and, given its use in this bullet point, we want to be consistent with your meaning by treating the word "compromised" in your question as meaning "loss of containment."

### **Third Bullet Point**

We respectfully suggest that the preliminary finding in the third bullet point in your e-mail goes beyond the information in the BCS MSDS and other Methomyl literature about the decomposition byproducts of Methomyl and is, therefore, misleading. We are not saying or even suggesting that the CSB is being intentionally misleading. Nevertheless, we urge the CSB to exercise caution regarding this issue for the reasons summarized below.

During the CSB's investigation of the incident at the Institute Plant that occurred on August 28, 2008, BCS produced a document entitled "Estimation of Methomyl Decomposition Products" (Bates No. CSB 02725 - 02726). This document discussed a report that approximates the decomposition products of Methomyl as they would have been at the time of the incident. The list of decomposition products in this document does not contain MIC ("Methylthiocyanate" is listed in the document as a product of Methomyl thermal decomposition, but methyl isocyanate is not listed).

A document published by a Pesticide Information Project (which includes the Extension Offices of Cornell University, Michigan State University, Oregon State University, and the University of California at Davis) discusses the results of Methomyl being heated to decomposition. This document, like the "Estimation" document discussed above, does not list MIC as a decomposition product. (This document, which was published in September 1993, is available on EXTOXNET, see the section on "PHYSICAL PROPERTIES AND GUIDELINES.")

## SENSITIVE SECURITY INFORMATION

DuPont's MSDS for Methomyl in its discussion of thermal decomposition does not state in absolute terms that MIC *will* be a product of every Methomyl decomposition. This MSDS says only that MIC "may" be produced as a result of thermal decomposition – not that MIC *will* be produced. (Referring to the hazardous gases of thermal decomposition of Methomyl, the DuPont MSDS says: "These may include sulfur oxides, methyl isocyanate, and hydrogen cyanide." (October 19, 2007 Edition at page 8).)

The BCS MSDS for Methomyl is, in substance, the same as the DuPont MSDS regarding products of thermal decomposition. Regarding products of thermal decomposition of Methomyl, the BCS MSDS simply lists those products of thermal decomposition that are known to have occurred without employing any language concerning the probability of any single decomposition product being present in any particular thermal decomposition. Of significance is the parenthetical under methyl isocyanate in the list of thermal decomposition products of Methomyl, which states: "trace; no adverse effects expected." The essence of this parenthetical is that, if MIC is present as a product of thermal decomposition of Methomyl, it will be in trace amounts only, which means in amounts that are just barely within the level of detection and well below the OSHA 8-hour PEL and the ACGIH 8-hour TWA of 2.5 mg/m<sup>3</sup>.

In short, the DuPont and BCS MSDSs and the literature do not support the CSB's preliminary finding in the third bullet point of your e-mail that "MIC *is* a byproduct of Methomyl decomposition." (Emphasis added.) At best the MSDSs and the literature support a preliminary finding that MIC *may* be a byproduct of Methomyl thermal decomposition.

In addition, BCS is concerned that the third bullet point, as it is presently written, could be read by some to mean that MIC, if it is a byproduct of Methomyl thermal decomposition at all, is the *only* byproduct of thermal decomposition. Such a reading, which is certainly possible given the present wording of the third bullet point, is clearly incorrect and ignores the fact that, if MIC were a byproduct of a particular Methomyl thermal decomposition, it would be present in only trace amounts.

Because BCS believes that the third bullet point, as presently written, is misleading, albeit unintentionally, we respectfully suggest that it be changed to read as follows: "The (BCS) MSDS and other literature about Methomyl thermal decomposition support the finding that MIC may be a byproduct of Methomyl thermal decomposition, but in trace amounts only."

## SENSITIVE SECURITY INFORMATION

### YOUR QUESTIONS

**“Was any piping or equipment containing any quantity of MIC compromised<sup>1</sup> during the explosion and subsequent fire?”<sup>2</sup>**

**Answer:** No.

**“Was MIC liberated from the thermal decomposition of Methomyl?”<sup>3</sup>**

**Answer:** Based on the document “Estimation of Methomyl Decomposition Products,” BCS believes that the answer to this question is “No.” Further, if MIC was a thermal decomposition product of the Methomyl that was released “into the intense solvent fueled fire,” the MIC would have been present in only trace amounts and would have been consumed immediately by the “intense . . . fire.”

**“Was *this* MIC released to the atmosphere?”<sup>4</sup> (Note: This question incorrectly assumes that MIC was “liberated.”)**

**Answer:** No. See the Answer to the second question immediately above.

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<sup>1</sup> As noted above, we are treating the word “compromised” as meaning “loss of containment,” which, in this context, would mean that some or all of a quantity of liquid MIC would have been released from piping or a piece of equipment.

<sup>2</sup> This information is SENSITIVE SECURITY INFORMATION because it concerns the structural integrity of piping and equipment that may contain a critical chemical asset within the Institute Plant (see 46 USC §§ 70102 and 70103; 33 CFR Part 105, Subparts C and D; 49 CFR Parts 15 and 1520). As such, this SENSITIVE SECURITY INFORMATION may not be disclosed to persons without a “need to know”, as defined in 49 CFR Parts 15 and 1520, except with written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation.

<sup>3</sup> This information is SENSITIVE SECURITY INFORMATION because it concerns a critical chemical asset and a restricted access area within the Institute Plant (see 46 USC §§ 70102 and 70103; 33 CFR Part 105, Subparts C and D; 49 CFR Parts 15 and 1520). As such, this SENSITIVE SECURITY INFORMATION may not be disclosed to persons without a “need to know”, as defined in 49 CFR Parts 15 and 1520, except with written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation.

<sup>4</sup> See Footnote 3.

Christopher W. Warner, Esq.  
February 20, 2009  
Page 5

**SENSITIVE SECURITY INFORMATION**

**“Why did BCS state that air monitoring data for MIC was “not available”?”<sup>5</sup>**

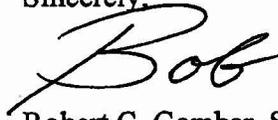
**Answer:** The only air monitoring information obtained for the time during and immediately after the incident on August 28, 2008, was organic monitoring for LEL. BCS does have monitoring equipment in the Methomyl Unit (a central analyzer and 15 pickup points throughout the Unit) that is calibrated to detect MIC. The MIC monitoring results are not recorded, but the detection of MIC in the Unit does result in an alarm in the control room. Based on all of the information available to BCS at this time, there were no MIC detection alarms during or after the incident on August 28, 2008.

**“When will these data [*i.e.*, data specific to MIC air monitoring] be produced to the CSB?”<sup>6</sup>**

**Answer:** See the Answer regarding monitoring immediately above.

Please contact me if you have any questions or have a need for additional information concerning the matters discussed in this letter.

Sincerely,



Robert C. Gombar, Sr.  
Counsel for Bayer CropScience,  
Institute Plant

WDC99 1687027-1.034362.0011

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<sup>5</sup> This information is SENSITIVE SECURITY INFORMATION because it concerns monitoring and personnel protection systems within a restricted access area within the Institute Plant (see 46 USC §§ 70102 and 70103; 33 CFR Part 105, Subparts C and D; 49 CFR Parts 15 and 1520). As such, this SENSITIVE SECURITY INFORMATION may not be disclosed to persons without a “need to know”, as defined in 49 CFR Parts 15 and 1520, except with written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation.

<sup>6</sup> See Footnote 5.

**From:** Gomez, Manuel  
**To:** Vorderbrueggen, John  
**Cc:** Bresland, John; Park, Bo  
**Subject:** Suggestions for Bayer--Recommendation potential  
**Date:** Tuesday, September 16, 2008 4:36:37 PM

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John:

At the Leadership Team meeting today, I suggested that we request documents from Bayer (and anything they have from their predecessors) regarding any previous analyses, designs, decisions, etc., they may have done for an inherently safer means of manufacturing, storing, and using MIC in their process. I am sorry you were not there, so I wanted to make sure to touch base with you on the issue ASAP. From a potential recommendation standpoint, I see great opportunity here.

I am not talking only about the history of the tank and the blast blanket they put on it, although we clearly need to know that history. I am suggesting a strong focus on whether Bayer made any effort or investigation about how to manufacture MIC in an inherently safer manner, or to use it in a way that involves much smaller inventories.

Note that *in a 5-minute Google search*, I found the article below. It's almost tailor-made to this question. There may well be much more if we look. It is from a Dupont author, and it specifically claims that they have instituted a process for just-in-time production of MIC with substantially less risk, and apparently without phosgene, which is undoubtedly another bad actor at the Bayer plant. Of course, I don't know for a fact that this guy's assertion is true, or that the risk is not "transferred" to some other manufacture and all those details. My point is simply that this could be a very important avenue of inquiry, one that could result in important recommendations, for both safety and security. And a lot of the good people (and political leaders) of WV would be very interested if the CSB could encourage this. This is also an area we have discussed many times, but have not had an opportunity to pursue. This case may be the perfect one to do so.

Remember that at BP, we found that the company had decided in the 90's that the blowdown was an obsolete and unsafe way of doing things, and they had done analysis and even designed the replacement, but decided not to go forward, apparently because money trumped safety (please, this is just a rough version of what I remember of BP; it's probably not entirely accurate). *What if we find that Bayer also knows how to do it much better but hasn't done so?*

Let's discuss this after you get out of that tunnel down in Georgia. I believe that our document requests will probably be prepared soon, and I am willing to guess that if anyone knows about inherently safer ways to make and/or use MIC, it's Bayer and its predecessors.

Hope all is well.

Manuel

<http://www.iitk.ac.in/che/jpg/papersb/full%20papers/B%2078.doc>

Title of paper: **Dupont's Inherently Safe MIC Process after Bhopal**

Author: Kamlesh K. Bhatia

Affiliation: Research Fellow  
Dupont Central Research & Development  
Experimental Station, P.O. Box 80304, Wilmington, DE 19880-0304

Telephone: [REDACTED]

Fax number: [REDACTED]

Email: kamlesh.k.bhatia [REDACTED]

Abstract:

### **Dupont's Inherently Safe MIC Process after Bhopal**

The Bhopal disaster had a serious immediate impact on Dupont. It threatened to shutdown our Lannate® (methomyl) Insecticide business as the methyl isocyanate (MIC) used for its manufacture could no longer be transported from Union Carbide's West Virginia plant to our Lannate® plant in LaPorte, Texas. Dupont responded to this critical situation by speedily bringing on stream in-house MIC production by an inherently safe, point-of-use, process based on air oxidation of monomethyl formamide (MMF). The MIC unit sits right next to the Lannate® unit and, except for a small amount of MIC in a short transfer line to the Lannate® reactor, MIC inventory/storage is eliminated completely. Design, construction and plant start up were all safely accomplished in just 6 months. The starting material MMF was not an article of commerce at that time. MMF production was also brought on stream in just 4 months at our Belle, West Virginia site. The paper will discuss the inherently safe process and its implementation at the unprecedented speed. All process units have operated safely in the 20-year period since then, without any major incidence. All this was made possible by the technical knowledge, procedures and a long safety tradition in place in the company. Dupont is now making the same resources available to others through our Dupont Safety Resource Business (DSRB).

Keywords: inherently safe; methyl isocyanate; Dupont

Manuel R. Gomez, DrPH, MS, CIH  
Director of Recommendations  
U.S. Chemical Safety and Hazard Investigation Board  
2175 K Street, NW [REDACTED]  
Washington, DC 20037

[REDACTED]

[REDACTED]

[REDACTED]

manuel.gomez [REDACTED]

**Warner, Chris**

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**From:** Gomez, Manuel  
**Sent:** Friday, March 13, 2009 5:31 PM  
**To:** Bresland, John  
**Cc:** Horowitz, Daniel; Vorderbrueggen, John; Warner, Chris  
**Subject:** FW: CSB to Hold Public Meeting in Institute, West Virginia on April 23; Investigators will Present Preliminary Findings and Board will Hear Public Comments on the Fatal Explosion at Bayer Cropscience

John:

I congratulate you on this decision. Events are rapidly confirming that my fears about the way we were handling this would come back to haunt us, and possibly to make us the focus of attention, when the attention should be on the safety of the process, and especially what the company and regulatory agencies have done to minimize risks, both since Bhopal, and especially since the incident.

I have communicated with you on this matter on several occasions, and this note is to reiterate my earlier suggestions and also to add some thoughts about preparation for the meeting. There is still much danger that the public meeting would "turn" against the CSB. Terrible as this would be for our Agency, the real danger is that it would divert attention from the primary issues and the parties that deserve the attention.

I believe we must do everything we can to keep the meeting from being diverted to secondary issues. Both the "terrorism-security" issues, and, yes, the emergency response issues are secondary. They deserve some attention, but they should not be the primary focus. The same goes for the nuts and bolts of the actual incident. They deserve attention, but moderately.

The primary issue from the standpoint of our mission, and from the expectations of the public, media and political leaders, is that the explosion could have potentially caused a large release of MIC, and we (CSB) do not know what the company(ies) have done about this risk, both before and after the incident. The list is long, but we don't know what hazards analyses they have done, we don't know if they have done a blast analysis following this incident, or if they even did one before, we don't know if there are other processes nearby that were also at risk, we don't know if they had other means available to make or use MIC and didn't adopt them (inherently safer), we don't know what kinds of management systems they have, we don't know what kind of corporate board oversight the company(ies) has(had) over these highly dangerous processes (did the Board get reports of incidents? Did they ever see a comparative analysis of alternatives?), and we don't even know if the Co has done a review of its hazard analysis after this incident, or implemented any changes as a result of it.

So I respectfully suggest that we must go to the meeting with either materials and as many answers as possible about the following questions, or the ability to say we have subpoenaed the information from the company:

1. Did any of the companies ever conduct a process hazard analysis of the MIC lines and tank connected to the Methomyl process? If so, what was (were) the outcome(s) and recommendation(s)?
2. What were the results of the hazard analyses and what recommendations were implemented or not? Why?
3. Did the Co even revisit its layers of protection for the MIC tank and associated piping following this incident, and what were the conclusions and recommendations? Were they adopted? Why or why not? I have even heard from the team that Bayer's last layer of protection for an MIC release is an employee who will fire a flare to ignite the MIC? Is this true? Is this adequate?
4. Did the company conduct a blast analysis of any kind following this incident and use it to evaluate its current layers of protection? If so, what were the results? What have

they done?

5. Did this company or any previous ones examine options for "just-in-time" production of MIC, or any other inherently safer alternatives? If so, what were the results and recommendations and why they adopt them or not? Dow reportedly has had in place a just in time process for MIC for years.

6. What did the Board of Directors of this and previous companies know about these risks? Were they informed? Were they making the decisions? On what basis?

There are many other issues. Management systems. MIC around the whole plant, not just around the methomyl process. Horrendous emergency response procedures and actions. The spy-spoor-terrorist stuff. A potentially and mysteriously missing (destroyed?) video. Damage offsite across the river (hence a big blast). Possible release of MIC from incomplete combustion. Unclear causes of death (trauma alone? MIC a factor? CN a factor?— it is hard to imagine that the families would not allow this info to be released to the CSB). Reports of methomyl dust covering large areas following the incident (was it treated as a hazwaste site? Were employees protected from dermal absorption? Was decontamination needed or carried out?). And now fatigue issues,

All these issues have direct bearing on potential recommendations. I would be happy to participate in the planning of this public meeting and in the continuing conduct of this investigation, from the recommendations side.

Manuel

Manuel R. Gomez, DrPH, MS, CIH  
 Director of Recommendations  
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 2175 K Street, NW Suite 400  
 Washington, DC 20037  
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 [REDACTED] (cell)  
 manuel.gomez@[REDACTED]

-----Original Message-----

From: news@[REDACTED]  
 Sent: Friday, March 13, 2009 1:38 PM  
 To: CSB All  
 Subject: CSB to Hold Public Meeting in Institute, West Virginia on April 23; Investigators will Present Preliminary Findings and Board will Hear Public Comments on the Fatal Explosion at Bayer CropScience

The following message is from the U.S. Chemical Safety Board, Washington DC

CSB to Hold Public Meeting in Institute, West Virginia on April 23; Investigators will Present Preliminary Findings and Board will Hear Public Comments on the Fatal Explosion at Bayer CropScience

Washington, DC, March 13, 2009- The U.S. Chemical Safety Board (CSB) today announced that it will be holding a public meeting on April 23, 2009, in Institute, West Virginia, to present preliminary findings from its investigation of the August 28, 2008, chemical processing tank explosion at Bayer CropScience which fatally injured two workers.

The meeting will begin at 6:30 p.m. at the West Virginia State University Wilson Building, Multipurpose Room, 103 University Union, Institute, WV, 25112. The meeting is free and open to the public. Pre-registration is not required, but to assure adequate seating attendees are encouraged to pre-register by emailing their names and affiliations to bayer@csb.gov by April 10.

At the meeting the CSB investigative team will present its preliminary findings on the circumstances of the accident to the four CSB board members and the public. The Board will

ask questions of the team in front of the audience and will then invite comments from members of the public. The meeting will be videotaped and an official transcript will be included in the investigative file.

'This was a serious accident which claimed the lives of two workers and had a significant impact on the surrounding community,' said CSB Chairman John Bresland. 'We hope to inform the public of our preliminary findings as well as gain additional information and insight into the events surrounding this incident. CSB public meetings aim to encourage active involvement and participation from members of the community, public officials and industry.'

Following the presentation of the CSB's preliminary findings, a panel of outside witnesses will be invited to speak on a number of issues related to the accident.

The CSB is an independent federal agency charged with investigating industrial chemical accidents. The agency's board members are appointed by the president and confirmed by the Senate. CSB investigations look into all aspects of chemical accidents, including physical causes such as equipment failure as well as inadequacies in regulations, industry standards, and safety management systems.

The Board does not issue citations or fines but does make safety recommendations to plants, industry organizations, labor groups, and regulatory agencies such as OSHA and EPA. Visit our website, [www.csb.gov](http://www.csb.gov)

For more information, contact Director of Public Affairs Dr. Daniel Morowitz, [REDACTED] cell [REDACTED] or Public Affairs Specialist Hillary Cohen, [REDACTED] cell [REDACTED]

This message was transmitted at 1:11 PM Eastern Time (U.S.A.) on March 13, 2009.

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# Bayer CropScience



## MEMO

**To:** Dietmar Westphal  
**From:** Mike Wey  
**Copy to:**  
**Subject:** MIC and Phosgene Safety Assessment

After the acquisition of Aventis CropScience a team was chartered by Bayer CropScience Industrial Operations and Bayer Corporation to review the overall safety and handling for Methyl IsoCyanate and Phosgene at the Institute site. A team was formed to perform the detailed assessment with the responsibility of reviewing the processes and making any recommendations for improvements and changes.

The team members were

[REDACTED]	Head of Production MIC and Phosgene
[REDACTED]	Head of QHSE
[REDACTED]	Head of Engineering
[REDACTED]	Head of Process Safety Bayer CropScience
[REDACTED]	Process Safety Specialist
[REDACTED]	Production Specialist MIC
[REDACTED]	Head of NAFTA QHSE
[REDACTED]	Manager Process Safety Bayer Corporation
[REDACTED]	Head of Process Services (part time)

The team divided the assessment into four basic elements. The first element was to review the process safety methodology used at the Institute site and to compare this to the methodology used by Bayer Corporation. The rationale for this first step was that if methodology used at the Institute site for evaluating process safety was robust and "equivalent or better" than the Bayer Corporation methodology, then the previous process safety would form a solid basis for assessing the overall safety of the subject processes.

The second element was to assess the overall safety of the MIC process at the Institute site. The team accomplished this task by reviewing key risk sheets from the most recent process hazard assessment performed on the MIC process.

The third element was to review the cross plant MIC transfer line from the MIC unit to the West Carbamoylation Center.

The final element was to perform a process hazard assessment on the phosgene process to identify any residual process risk from this process

## Results

### Process Safety Methodology

The team concluded that the process safety methodology used at the Institute site is a robust methodology, and in some ways is better than the current process used in Bayer Corporation. Both process safety methods use HAZOP (hazard and operability) as the fundamental tool to identify potential process safety consequences that might result from various operational deviations. The guide words used in these tools are fundamentally the same.

The Institute process includes a semi-quantitative risk assessment tool to determine the likelihood of the deviation occurring and the potential consequence(s) of the deviation. This information is placed within a risk matrix. (See attached Risk Matrix) A risk sheet is a one-page summary of the scenario and includes the likelihood of the deviation, the potential consequences, and the safety measures in place. Two examples of risk sheets considered by the team are included as an attachment. The tool then considers the measures in place to reduce either the likelihood of the deviation or the consequences of the deviation. If there are insufficient measures in place to reduce the risk to an acceptable level, additional measures are required to be implemented.

#### Safety of the MIC Process

Since the process safety methodology used at the Institute site was robust, the team reviewed the risk sheets from the most recent process hazard assessment of the MIC process. The purpose of the review was to determine that the identified risks were appropriately characterized as to their potential consequences. The team considered all the risk sheets that had been generated by the previous PHA team and selected 20 for more detailed review. As part of the review, several risk sheets that had been developed were reclassified since they were more appropriate to be considered in the Security Vulnerability Assessment as security concerns.

The result of the risk sheet review was that the residual risks were properly classified. There are several risk sheets that will remain classified as 2A (i.e. no further mitigation will be applied, but the risk sheets will be reviewed and approved annually by site management), since the potential consequences can not be further reduced, regardless of the number of additional measures implemented. There were no Risk 1's identified.

The risk sheet review identified several issues that require additional consideration. The basic design criteria applied to the redesign of the MIC production facility under Institute Modification Project (IMP) was that no reasonable release scenario would result in a concentration of the chemicals of concern at the fence line greater than certain industrial guidelines. Bayer does not use these guidelines as a design criteria for its production facilities but applies appropriate safety layers to ensure a safe operating process.

In addition to the above items there were additional discussion regarding alternative methods to produce MIC and the active mitigation techniques applicable to a MIC release. The alternative process technologies have been previously reviewed and summarized. Based on the literature available at this time, the current process appears to be as safe as the other alternative methods to produce MIC at Institute.

Any small liquid MIC releases are handled within the unit by covering the material with carbon to adsorb the MIC and prevent further vaporization of the MIC. An important characteristic of the MIC product is that it is maintained at or below ambient temperature conditions, limiting its ability to volatilize. The use of carbon to mitigate liquid releases as included in the unit SOP's also needs to be incorporated within the site wide emergency response procedures. Because this active mitigation measure does not adequately address the potential release scenarios associated with streams of MIC at or near the boiling point, the team recommends further investigation for active mitigation measures.

#### Single Wall Cross Plant Transfer Line

The issue of the single wall plant transfer line was reviewed. Given that MIC product is not corrosive and is handled in 304 SS piping, the major hazards associated with the cross plant transfer line relate to external damage considerations. The two potential causes of damage are external impact causing a failure of the pipeline and a fire in a nearby area resulting in sufficient heat input caused by external mechanisms to cause a failure of the piping system.

**REDACTED: SENSITIVE SECURITY INFORMATION**

The fire case has been considered and has actually occurred onsite in the recent past. An ethylene oxide transfer pipe caught fire in the pipe rack and caused damage to the nearby MIC pipe and supports, but there was no release from the MIC piping. Heat shields and/or sprinklers were installed in areas containing flammables near the MIC transfer pipe after this incident. No further action is recommended to address this scenario.

#### Phosgene Process Hazard Assessment

A team conducted a detailed PHA for the phosgene process starting in December 2002. The complete details of the PHA have been reported in the normal method at the Institute site. Dave Barnett (Bayer Corporation process safety representative) participated in the PHA along with other members from the Institute site. This team, along with the members of the MIC safety review team reviewed the 18 draft risk sheets generated from the PHA. Seven of the draft risk sheets were associated with the phosgene process, one was deleted, 3 were rated as risk 3's requiring no further action and three were rated as risk 2's. These are currently being reviewed by management for further risk reduction measures.

Additional discussions were held regarding the use of steam ammonia curtains to actively mitigate phosgene releases and the use of phosgene indicator badges for employees. It should be noted that none of the hazards identified in the PHA "required" the use of these additional measures. These were considered based on their use at Bayer sites that handle phosgene. Additional information was obtained from the Widnes (UK) site and Pont de Claix (FR) sites regarding the use of phosgene badges and active mitigation systems as a comparison to the Bayer practices.

In Rhodia Pont de Claix, the operators wear badges at all times in the units with phosgene (contained unit like TDI or open unit like phosgene) even when they are in the control room. Maintenance operators and visitors have to wear badges to enter in the area of these units. On the contrary, operators of the other plants around the units using phosgene do not wear badges.

In Widnes, the site uses Self Contained Breathing Apparatus (SCBA) for any operation where there is a risk of breaking containment and phosgene has been in contact with equipment, however the permit to work preparations are aimed at trying to ensure that none is present.

The Widnes site has a stock of phosgene badges; they are not worn on the plant as a routine. The secondary containment on the phosgene handling process equipment eliminates the need for this. The site recommends that a badge is worn inside an SCBA mask when working while containment is being broken. This will give a quantitative indication should anyone inhale phosgene while wearing respiratory protection.

There has been no information received on the use of active mitigation systems for these sites as of this date.

## Recommendations

### Phosgene Badges

No release scenario risk sheet indicates that phosgene badges are necessary for employee safety. Phosgene badges are used to measure the dosage (product of time exposed and concentration) experienced by a person so that appropriate medical treatment can be provided. The potential for any person to be exposed is highest in the phosgene unit and those production areas nearby. The team recommends that phosgene badges be worn by all within a defined area surrounding the phosgene production area. The team will review the potential release scenarios and make a recommendation to define the operating areas where phosgene badges will be worn. This will be considered a pilot operation and will be evaluated after a period of one year. After this review, a decision will be made on further changes to this program.

It was emphasized during the discussions that it is essential to convince the employees of the added value for wearing the phosgene badges for the program to be effective.

### Steam Ammonia Curtain

No specific release scenario considered in the phosgene safety assessment requires a steam ammonia curtain to control any potential phosgene release from the unit. It is also recognized that if the steam ammonia curtain was effective in destroying MIC, there is substantial benefit to the installation of this active mitigation system for reducing potential consequences of a MIC or phosgene release.

Engineering will begin to develop a preliminary scope and cost estimate for the installation of a steam ammonia curtain for the MIC/Phosgene unit at Institute.

### Active Mitigation for MIC Releases at or near the Boiling Point

There was considerable discussion regarding the predicted effectiveness of a steam ammonia curtain for the mitigation of a MIC release. It is known that liquid ammonia solutions will decompose liquid MIC. It is uncertain if this reaction, in a vapor phase, will take place quickly enough to be an effective mitigation technique in the production unit. To address these uncertainties the following steps will be taken:

- Pilot studies will be undertaken at Institute to determine the vapor phase reaction kinetics and effectiveness of a steam ammonia solution in destroying MIC. Brice LeCorre will lead this effort.
- Lothar Doellinger will determine if Bayer (Dormagen) has any information regarding the use and effectiveness of steam ammonia curtains or other active mitigation techniques for MIC releases at our near the boiling point. The team will investigate other mitigation techniques.

The team will review the information described above before July 1, 2003 prior to making a final recommendation.

Double Wall Pipe for Cross Plant Transfer Line

The team does not recommend the installation of a double wall transfer pipe from the MIC unit to the West Carbonylation Center. The major hazard to this line is the risk of mechanical impact by a crane or similar device. A double wall pipe does not significantly improve the safety against this hazard.

RISK SHEET REVIEW/CHECK SHEET		
Unit: <u>MIC</u>	Risk Sheet Number: 043	Initial Date: 11-16-98
Reviewers:	[REDACTED]	
In attendance:	[REDACTED]	

**Recommendation to Management:**

<input type="checkbox"/> Further Mitigation	<input checked="" type="checkbox"/> Place on Annual Review list	<input type="checkbox"/> Other:
<i>Explanation:</i> Final Risk ranking is 2. No further mitigation recommended. Place on annual review list.		
<i>Approval Signatures:</i>		
<u>[REDACTED]</u> MIC Unit Head of Operations Operations	<u>[REDACTED]</u> Date ACS Institute Head of Operations Date	<u>[REDACTED]</u> Date V.P. of N.A. Site Date

**Check list review detail:**

- Scenario reviewed
  - Process-related hazard (continue)
  - Job-related hazard (refer to HS group)
- Scenario credibility:
  - Confirmed
  - Not considered credible as written

**Severity:**

<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised – If revised describe reasoning	<input type="checkbox"/> Other:
<i>Notes/Actions:</i> Rupture of overhead MIC line would result in: Multiple severe health effects on-site and off-site, etc. Potential to kill fish, birds, etc. International media coverage. Significant non-compliance. < \$1,000,000 in equipment damage, lost production.		
<input checked="" type="checkbox"/> People V - Multiple effects off-site	<input checked="" type="checkbox"/> Environment M - Kill fish, birds, etc.	<input checked="" type="checkbox"/> Image V - International Media
<input checked="" type="checkbox"/> Legal H - Significant Non-Compliance	<input checked="" type="checkbox"/> Financial M - \$100K to \$1M	

**Probability:**

<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised – If revised describe reasoning	<input type="checkbox"/> Other:
<i>Notes/Actions:</i> The following statement is considered by the group to be untrue: "Considerable production pressure to continue to run the plant while using lifting gear and no instruction not to do so." Agree with original assessment that this scenario is almost inconceivable (improbable = 1). One I gives Probability 3.		

**Initial Risk:**

<input checked="" type="checkbox"/> People V-3 → 1	<input checked="" type="checkbox"/> Environment M-3 → 3	<input checked="" type="checkbox"/> Image V-3 → 1	<input checked="" type="checkbox"/> Legal H-3 → 2	<input checked="" type="checkbox"/> Financial M-3 → 3
<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised – If revised describe reasoning	<input type="checkbox"/> Other:		
<i>Notes/Actions:</i> Revised based on severity and probability discussions above.				

**Mitigation steps/actions:**

<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised – If revised describe reasoning	<input type="checkbox"/> Other:
<i>Notes/Actions:</i> Class A Safe Work Permit required for all lifting over lines/equipment containing toxic chemicals. [1] Detection monitors, Emergency squad on-site, emergency ignition device, one automatic isolation valve and other manual isolation valves. "Vague" definition of cranes was corrected in revised EHS Procedure PS-22.		

**Residual Risk:**

<input checked="" type="checkbox"/> People V-4 → 2	<input checked="" type="checkbox"/> Environment M-4 → 3	<input checked="" type="checkbox"/> Image V-4 → 2	<input checked="" type="checkbox"/> Legal H-4 → 3	<input checked="" type="checkbox"/> Financial M-4 → 3
<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised – If revised describe reasoning	<input type="checkbox"/> Other:		
<i>Notes/Actions:</i> Revised based on severity, probability, and mitigation discussions above.				

Review Status: Complete 10-29-01.

RISK SHEET REVIEW CHECK SHEET		
Unit: <u>MIC</u>	Risk Sheet Number: 106	Initial Date: 11-18-98
Reviewers:	[REDACTED]	
In attendance:	[REDACTED]	

**Recommendation to Management:**

<input type="checkbox"/> Further Mitigation	<input checked="" type="checkbox"/> Place on Annual Review list	<input type="checkbox"/> Other:
<i>Explanation:</i> No further action necessary. Adequately mitigated, but requires annual review due to potential severity.		
<i>Approval Signatures:</i>		
[REDACTED] MIC Unit Head of Operations	[REDACTED] Date ACS Institute Head of Operations	[REDACTED] Date V.P. of N.A. Site Operations

**Check list review detail:**

- Scenario reviewed
- Process-related hazard (continue)
  - Job-related hazard (refer to HS group)
- Scenario credibility:
- Confirmed
  - Not considered credible as written

**Severity:**

<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised - If revised describe reasoning	<input type="checkbox"/> Other:
<i>Notes/Actions:</i> Polymerization is exothermic, but does not evolve CO <sub>2</sub> . Increased temperature will evaporate MIC increasing pressure and possibly rupturing the make tank. Unmitigated severity would be very high. Severity revised from 1 (=H) to V according to new definitions.		
<input checked="" type="checkbox"/> People V - Multiple effects off-site	<input checked="" type="checkbox"/> Environment M - Kill fish, birds, etc.	<input checked="" type="checkbox"/> Image V - International Media
<input checked="" type="checkbox"/> Legal V - Loss of Permit/Registration	<input checked="" type="checkbox"/> Financial V - \$40M	

**Probability:**

<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised - If revised describe reasoning	<input type="checkbox"/> Other:
<i>Notes/Actions:</i> 2 Causes: Phosgene content < 10 ppm - F; Tank temperature > -4°C - I (no history of this) Would also require sufficient induction period to initiate polymerization (R&D data - Project Report # 813C40 Feb 1, 1979 from A.K. Taori provides that polymerization of MIC in the absence of phosgene is very slow. At 4°C, phosgene levels of less than 10 ppm were sufficient to completely inhibit any polymerization of MIC. Tank temperature is maintained at -4°C with safeguards in place to maintain this temperature. 70 ppm referenced in SOP is conservative. F & I → Probability 3		

**Initial Risk:**

<input checked="" type="checkbox"/> People V-3 → 1	<input checked="" type="checkbox"/> Environment M-3 → 3	<input checked="" type="checkbox"/> Image V-3 → 1	<input checked="" type="checkbox"/> Legal V-3 → 1	<input checked="" type="checkbox"/> Financial V-3 → 1
<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised - If revised describe reasoning	<input type="checkbox"/> Other:		
<i>Notes/Actions:</i>				

**Mitigation steps/actions:**

<input type="checkbox"/> Confirmed	<input checked="" type="checkbox"/> Revised - If revised describe reasoning	<input type="checkbox"/> Other:
<i>Notes/Actions:</i> Redundant refrigeration of make tank inhibits polymerization [1] Daily sample and analysis of phosgene content in make tank [1] and MIC stream entering the make tank [1] High temperature alarm [0.5] and High pressure alarm [0.5] alerts operator to intervene Rupture Disc and Safety Valve vent to emergency vent scrubber [1] Reactive tank intervention procedure to destroy MIC in the event of polymerization [0.5]		

**Residual Risk:**

<input checked="" type="checkbox"/> People V-4 → 2	<input checked="" type="checkbox"/> Environment L-4 → 3	<input checked="" type="checkbox"/> Image V-4 → 2	<input checked="" type="checkbox"/> Legal V-4 → 2	<input checked="" type="checkbox"/> Financial V-4 → 2
<input type="checkbox"/> Confirmed	<input type="checkbox"/> Revised - If revised describe reasoning	<input type="checkbox"/> Other:		
<i>Notes/Actions:</i> Residual probability of 4 is actually 8.5 (3 + 5.5 = 8.5)				

Review Status: Complete 1-2-02

Risk Sheet n° 043									
Ref. Doc. : P&ID 817733-02B1			Rev. n° : 11		Date : 03-04-02			D.Sheet 85	
PLANT		Aventis CropScience Institute			FACILITY		ECC		
SECTION		MIC			EQUIPMENT		MIC TRANSFER PIPEWORK		
UNDESIRABLE EVENT		<b>Rupture of overhead MIC line</b>							
CAUSES NECESSARY FOR THE EVENT		1 – Crane crashes into MIC pipe between Make Tank C-A242 and Field Storage Tank (C-501) during a transfer							1
<p><b>Scenario leading from the causes to the event and to its consequences</b>            Crane crashes into MIC pipe between Make Tank C-A242 and Field Storage Tank C-501 during a transfer            Most vulnerable areas are near the Unit and the pipe bridge            MIC pipe fractured - Reverse flow protection stops the Storage tank discharging            The contents of Make Tank C-A242 continue to discharge from the fractured pipe            Rupture of overhead MIC line would result in: Multiple severe health effects on-site and off-site, etc. Potential to kill fish, birds, etc. International media coverage. Significant non-compliance. &lt; \$1,000,000 in equipment damage, lost production.</p>									
CONSEQUENCES OF THE EVENT		People	Envir.	Image	Legal	Finance	Severity	Probability	Potential Risk
		V	M	V	H	M	V	3	1
<p><b>Means of prevention: limit the probability of the event</b>            Class A Safe Work Permit required for all lifting over lines/equipment containing toxic chemicals.            Detection monitors            Emergency squad on-site            Emergency ignition device            One automatic isolation valve and other manual isolation valves.            EHS Procedure for Safe Use of Cranes PS-22.</p>								N 1	
<p><b>Means of protection: limit the severity of the consequences</b>            None</p>									
<b>Event with means of prevention and/or protection</b>									
RESIDUAL SCENARIO		People	Envir.	Image	Legal	Finance	Severity	Probability	Residual Risk
		V	M	V	H	M	V	4	2A
Present at original risk assessment H. Anderson, R. Downing, C. Lawrence, & R. Vokes 02-05-99						Ref RS_001-010.doc			
Present at risk re-assessment P. Ragan, R. Downing, V. Devgen, W. Frampton, B. LeCorre, & N. Zimmerle 10-29-01						Printed 04-20-09			

## Risk Sheet n° 106

Ref. Doc. : P&ID 817733-02B1 #1		Rev. n° : 11		Date : 03-04-02		D.Sheet 79		
PLANT	Aventis CropScience Institute		FACILITY	ECC				
SECTION	MIC		EQUIPMENT	MIC MAKE TANK (C-A242)				
UNDESIRABLE EVENT	<b>Atmospheric release of MIC Make Tank contents</b>							
CAUSES NECESSARY FOR THE EVENT	1 - Phosgene content < 10 ppm 2 - Tank temperature > -4°C						F I	
<b>Scenario leading from the causes to the event and to its consequences</b>								
<p>Phosgene content of MIC in MIC Make Tank C-A242 &lt; 70 ppm                      Polymerization is exothermic. Increased temperature will evaporate MIC increasing pressure                      Bursting disc PSE A242-50 failure is incapable of preventing the pressure from rising                      Weakest item on MIC Make Tank C-A242 eventually fails causing atmospheric release                      Unmitigated severity would be very high.</p>								
CONSEQUENCES OF THE EVENT	People	Envir.	Image	Legal	Finance	Severity	Probability	Potential Risk
	V	M	V	V	V	V	3	1
<b>Means of prevention: limit the probability of the event</b>								
Redundant refrigeration of make tank inhibits polymerization								N 1
Daily sample and analysis of phosgene content in make tank								1
Daily sample and analysis of MIC stream entering the make tank								1
High temperature alarm alerts operator to intervene								0.5
High pressure alarm alerts operator to intervene								0.5
Rupture Disc and Safety Valve vent to emergency vent scrubber								1
Reactive tank intervention procedure to destroy MIC in the event of polymerization								0.5
<b>Means of protection: limit the severity of the consequences</b>								
<p>Would also require sufficient induction period to initiate polymerization (R&amp;D data - Project Report # 813C40 Feb 1, 1979 from A.K. Taori provides that polymerization of MIC in the absence of phosgene is very slow. At 4°C, phosgene levels of less than 10 ppm were sufficient to completely inhibit any polymerization of MIC. Tank temperature is maintained at -4°C with safeguards in place to maintain this temperature. 70 ppm referenced in SOP is conservative</p>								
<b>Event with means of prevention and/or protection</b>								
RESIDUAL SCENARIO	People	Envir.	Image	Legal	Finance	Severity	Probability	Residual Risk
	V	M	V	V	V	V	4	2A
<small>Present at original risk assessment H.Anderson, R.Downing, C. Lawrence, &amp; R.Vokes 02-05-99                      Present at risk re-assessment P. Ragan, R. Downing, V. Devgon, W. Frampton, &amp; N.Kimmerle 01-02-02</small>								
<small>Ref RS_001-010.doc                      Printed 04-20-09</small>								



Bayer CropScience

with  Bayer Technology Services  
Americas

## MIC Inventory Model Institute, WV

# Preliminary Runs' Results

Bayer CropScience / BTS Americas  
Preliminary Results - 8/12/03  
K. Bloss / B. McDavid / M. Dodig

**Business Confidential**

WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR Part 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR Part 1520, except with the written permission of the Administrator of the Transportation Security Administration. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by [5 U.S.C. 552](#) and 49 CFR Part 1520.

# Conclusions

## 1) Increased unavailability of MIC could lead to following delays:

- 150K - avg of 4% of additional delays per unit
- 100K - avg of 8% of additional delays per unit

## 2) Limiting maximum MIC capacity would lead to:

- 150K - 44% increase in shutdowns of MIC units, on avg
- 100K - 120% increase in shutdowns of MIC units, on avg

## 3) Points 1 and 2 are indirectly proportional

- reducing MIC shutdowns would lead to additional delays in users' production

## 4) Forcing MIC inventory levels down appears feasible, but costly

- to estimate the costs accurately, we need to know shutdown costs in all the units, as well as capacity costs

# Next Steps?

- Evaluate eliminating WCC Tank...
- Evaluate setting different inventory triggers and MIC usage priorities to increase overcall capacity...
- Evaluate different inventory replenishment scenarios...
- Create Excel MIC Availability Model to evaluate schedule feasibility, utilization rates and run times at different times in the year...
- Suggestions?

Bayer CropScience



Mr. John Vorderbrueggen  
Supervisory Investigator  
U.S. Chemical Safety and Hazard Investigation Board  
[Redacted]  
Washington, D.C. 20037

Subject: Inspection of Bayer CropScience Institute Plant

Dear Mr. Vorderbrueggen:

This letter and the enclosed package respond to your letters dated March 10 and March 16, 2009 and our various discussions regarding documents and information containing Sensitive Security Information ("SSI") that were previously produced by Bayer CropScience ("BCS") to the United States Chemical Safety and Hazard Investigation Board ("CSB"). During the course of the CSB's on-going investigation of the August 28, 2008 incident, documents and information that contain SSI were produced to the CSB as an entity with a "need to know."

March 27, 2009

Bayer CropScience  
Institute Site  
[Redacted]  
Institute, WV 25112  
Tel [Redacted]  
Fax [Redacted]

Please find enclosed: (1) an SSI Log that identifies the previous responses that contain SSI, the specific pages in those responses that contain SSI, and the specific provisions of 49 CFR Part 1520 that require the SSI designations; (2) hard copy pages appropriately labeled as containing SSI to replace documents previously produced to the CSB in hard copy; and (3) CDs appropriately labelled as containing SSI (including SSI labels on specific pages within CD files whenever possible) to replace responses previously produced to the CSB in electronic form.

As you know, the United States Coast Guard ("USCG") has identified the Institute Plant as a high risk facility under the Maritime Transportation Security Act of 2002 ("MTSA"). 46 U.S.C. § 70102(a). As such, the Institute Plant is required to perform a Facility Security Assessment ("FSA"), also known as a Facility Vulnerability Assessment ("FVA") (46 U.S.C. § 70102(b); 33 CFR §§ 105.105 & 105.300) and to prepare (and have approved) a Facility Security Plan ("FSP") (46 U.S.C. § 70103(c); 33 CFR 105.400(a) & (b)). The FSP, which contains an FSA Report and an FVA Summary, has been deemed SSI by the USCG, and BCS has an obligation under MTSA and the regulations promulgated under MTSA to protect SSI under 49 CFR Part 1520. 46 U.S.C. § 70103(d); 33 CFR § 105.400(c); 49 CFR §§ 1520.5(a)(3), 1520.5(b)(1)(ii), 1520.5(b)(5), 1520.7, and 1520.9.

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The Institute Plant has prepared an FSP. It has been submitted to and been approved by the USCG. The Institute Plant contains many critical chemical assets. The Methomyl Unit at the Plant contains and uses three critical chemical assets: Chlorine, Methyl Isocyanate ("MIC"), and Methyl Mercaptan. See 33 CFR Part 126 and the Hazardous Materials Table at 49 CFR § 172.101. The existence of these three critical chemical assets in the Methomyl Unit of the Institute Plant is not itself SSI. However, the potential vulnerabilities associated with these three critical chemical assets and the protective measures in place to protect against those potential vulnerabilities, which are referenced in the FSA Report and the FVA Summary (both included within the FSP), are, by law, designated as SSI. Through the FSA Report and the FVA Summary, Institute's FSP identifies, among others, the following potential vulnerabilities:

- Theft or destruction of a chemical that can be used directly as a weapon of mass destruction or can be developed into a weapon of mass destruction;
- Terrorists damaging or destroying facilities, such as storage tanks, located on the waterfront (Kanawha River); and
- Potential damage by terrorists to plant chemical processes and equipment.

Through the FSA Report and the FVA Summary, the Institute Plant's FSP identifies, among others, the following vulnerability mitigation and protective measures:

- The use of close circuit television cameras and monitors;
- Creation of restricted areas where critical chemical assets are produced or stored and providing additional security/safety controls in those areas;
- Ensuring that the barge port/dock area is clearly marked as a "Secure Area";
- Training of personnel;
- Chemical process automation and use of "fail-safe" technology;

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- Designation of areas containing critical chemical assets as "target areas" (e.g., storage tank areas, process control rooms, etc.) and providing additional security/safety controls; and
- Providing equipment, gear, and systems to protect facility personnel.

With regard to chemical process automation and the protection of critical chemical assets in "target areas," it is important to understand that the measures taken by BCS pursuant to OSHA's Process Safety Management Standard (the "PSM Standard") provide many, if not most, of the protective measures to prevent a catastrophic release of highly hazardous chemicals, such as Chlorine, MIC, and Methyl Mercaptan. For example, PSM-related protective measures for critical chemical assets are described in Process Flow Diagrams ("PFDs"), Piping & Instrumentation Diagrams ("P&IDs"), Process Hazards Analyses ("PHAs"), as well as other PSM information related to critical chemical assets that provides details about the materials used to construct the process equipment, typical storage volumes, the design of over-pressure relief systems, material and energy balances, process safety systems (e.g., process interlocks, chemical detection systems, suppression systems, physical barriers, etc.), information about vulnerabilities discovered because of previous incidents involving critical chemical assets, Standard Operating Procedures ("SOPs") for operating chemical processes involving critical chemical assets both during normal and emergency operations, computer and other automated systems to control processes containing critical chemical assets, the location of process equipment containing critical chemical assets, and other similar types of information. These protective measures are incorporated by reference in the complete Facility Security/Vulnerability Assessment (a massive document) that was then used to create the FSA Report and the FVA Summary, both of which are included in the FSP.

During its investigation of the explosion and fire in the Methomyl Unit last August 28th, the CSB asked for information about, among other things, the construction and protection of the MIC "day storage tank" and its related transfer piping in the Methomyl Unit. Although the measures in place to protect the MIC "day storage tank" and its related piping worked as designed to protect the equipment – MIC was not released nor was it involved in any way in the August 28th incident – BCS provided the information to the CSB as persons with a "need to know" under 49 CFR § 1520.11. The information that was provided contained SSI, and it was marked as "Confidential Business Information," but did not have all of the SSI markings required by 49 CFR §

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1520.13. Hence, the documents containing SSI are being reproduced to the CSB at this time and we have enclosed an SSI Log.

The enclosed SSI Log represents BCS' good faith effort to identify each request by the CSB in response to which BCS believes SSI, as described above, was produced. In the column labelled "Pages Containing SSI," BCS attempts to identify the specific pages within the responses that BCS believes contain SSI. Per your request, we have also included a column in the SSI Log labelled "49 CFR," in which BCS identifies the provisions of 49 CFR § 1520.5 that make the identified documents or information SSI, and we also provide a brief explanation as to why the documents or information are covered by those provisions.

BCS has endeavored to conduct as complete a review and identification as was possible given the time limit set by the CSB. If the CSB disagrees with any SSI designation, BCS stands ready to discuss it with the CSB, the USCG and the Transportation Security Administration. Similarly, if the CSB discovers a document in the BCS production that it believes contains SSI but has not been marked as such, BCS reminds the CSB of its own obligation to mark that document as SSI and to treat it accordingly (See 49 CFR § 1520.13).

**NOTE: The enclosed SSI log does not identify any of the documents and other forms of information created by the CSB, which, almost certainly, also contain SSI (such as photographs, field notes, interview notes, audiotapes of interviews, interview transcripts, etc.). BCS respectfully reminds the CSB of its own independent obligation as a "covered person" to label and protect such SSI (See 49 CFR §§ 1520.7, 1520.9 & 1520.11).**

As we have stated repeatedly, we make these SSI designations pursuant to the regulations promulgated under the MTSA in order to comply with our obligations under the law and to protect our workers and the community in proximity to our chemical plant and barge port from any act of terrorism or sabotage. Our actions taken to comply with the MTSA and protect SSI are not intended to interfere in any way with the efforts of the CSB to conduct a thorough investigation of the August 28, 2008 incident involving the Residue Treater in the Methomyl Unit. Furthermore, in no way have we suggested that the existence of SSI in the possession of the CSB should cause the CSB to cancel or delay its public hearing or to otherwise not perform any other investigation task that the CSB deems necessary. BCS has and continues to cooperate fully with the CSB in its investigation efforts, consistent with our mutual legal requirements to comply with the MTSA and its regulations with



SENSITIVE SECURITY INFORMATION

SENSITIVE SECURITY INFORMATION LOG  
DOCUMENTS PRODUCED TO THE CSB

The log below identifies those document requests by the CSB in response to which BCS believes information containing SSI was produced but not marked completely as containing SSI. The column labeled "Pages Containing SSI" identifies the specific pages within the responses that BCS believes contain SSI. In the final column, labeled "49 CFR," BCS identifies the provision(s) of 49 C.F.R. § 1520.5, which BCS believes require the identified documents or information to be marked and protected as containing SSI and includes a brief explanation as to why BCS believes the documents or information are covered by those provisions. BCS has endeavored to conduct as complete a review and identification as was possible given the time limit set by the CSB.

If the CSB disagrees with any document designated as containing SSI, BCS is ready to discuss it with the CSB, the United States Coast Guard and the Transportation Security Administration. More importantly, if the CSB discovers that a document that does contain SSI has not be marked as such by BCS, BCS reminds the CSB of its own obligation to mark that document as containing SSI and to treat it accordingly. **NOTE: This Log does not identify any of the documents or other forms of information created by the CSB, which, almost certainly, also contain SSI (such as photographs, field notes, interview notes, audio recordings of interviews, interview transcripts, etc.). BCS reminds the CSB of its own independent obligation as a "covered person" under the MTTSA and its regulations to label and protect such SSI.**

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D01-003	An overhead plot plan of the Institute Facility and a plot plan of the Methomyl Unit*	Plot Plan Pesticide , 1136854, Revision 3 P&ID for Methomyl Unit, drawing no. 1101032-25B, Rev. 15 Plot Plan of WCC Area	BCS-002 BCS-005 BCS-008	BCS-002	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3) The Plot Plan, which identifies specific locations of critical chemical assets, is included in the Facility Security / Vulnerability Assessment (PSA), and is summarized in the Facility Security Plan (FSP).

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SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D02-002	Copy of PHA and safer siting analysis for the control room building. The response should include the most recent PHA and all revalidations.	Copy of PHA and safer siting analysis for the control room building. The response should include the most recent PHA and all revalidations.	CSB00470- CSB00479	CSB00473 - CSB00475	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3) The marked pages identify safety measures associated with MIC storage, including a blast mat, double wall piping, rupture disks, etc. These measures are included in the FSA and related documents and summarized in the FSP.
BC-D02-004	Provide temperature, pressure and flow rate data for 24 hours prior to the incident, and 8 hours following the incident for the 5,000 gallon MIC storage tank located south of the Methomyl unit.	Provide temperature, pressure and flow rate data for 24 hours prior to the incident, and 8 hours following the incident for the 5,000 gallon MIC storage tank located south of the Methomyl unit.  Provided in electronic CD Format	CSB02049 - CSB02051	CSB02049 - CSB02051	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3) The data in this response identifies how the MIC Tank is instrumented and monitored to prevent a catastrophic release of MIC, including identification of instrument loop numbers and locations where temperature, pressure and other measures are monitored. The instrumentation is identified in the PHA, which is included in the FSA and related documents and summarized in the FSP.

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SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D03-013	Vessel drawings and records, including by not limited to the U-1 Manufacturer's Data Report for Pressure Vessels, pressure test records and relief calculations for C-6449 MIC tk located immediately south of the C-2565 residue treater in the Methomyl unit. The response should include a P&ID of the MIC emergency dump tank.	Vessel drawings and records, including by not limited to the U-1 Manufacturer's Data Report for Pressure Vessels, pressure test records and relief calculations for C-6449 MIC tank located immediately south of the C-2565 residue treater in the Methomyl unit. The response should include a P&ID of the MIC emergency dump tank.	CSB02052 - CSB02162	CSB02052 - CSB02162	§ 1520.5(b)(1)(ii), (b)(5) & (a)(3) This response includes the design specifications for the MIC Day Tank, which includes SSI in the FSP and FSA. This is essentially the PSI file for the MIC Tank, which includes construction, location, instrumentation and other documentation containing SSI.
BC-D03-014	Design specifications and calculations for the protective cover or blast mat that surrounds the MIC tank located immediately south of the C-2565 residue treater tank	Attached report Blast Mat Penetration Analysis  Supplement	CSB02209- CSB02214  and CSB02227- CSB02228	CSB02209 - CSB02214  Full contents of Disk CSB02228	§ 1520.5(b)(1)(ii), (b)(5) & (a)(3) Entire response, includes information regarding a critical safeguard on the MIC Tk. This information is included in the FSP, the FSA and related documents.

CSB is a not-for-profit organization that has been established to provide information to the public regarding the safety of chemical processes. The information provided is for informational purposes only and is not intended to be used as a basis for legal action. The information is provided as a public service and is not intended to be used as a basis for legal action. The information is provided as a public service and is not intended to be used as a basis for legal action.

SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D05-12 & BC-D08-002	A copy of the Methomyl/Larvin Unit eLog (operator log) from August 21, 2008 to August 31st, 2008, referenced in eLog daily notes (BC-D07-009) for recording operator issues and actions at the panel. This request supersedes item BC-D05-012 requested by CSB on 9/12/08.	A copy of the Methomyl/Larvin Unit eLog (operator log) from August 21, 2008 to August 31st, 2008, referenced in eLog daily notes (BC-D07-009) for recording operator issues and actions at the panel. This request supersedes item BC-D05-012 requested by CSB on 9/12/08.	CSB01744- CSB01806	CSB01750 CSB01766 CSB01803	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3) CSB01750 & 1766 identify times of the day when MIC is transferred to the MoM Unit, which is SSI in the FSA and related documents and summarized in the FSP. CSB01803 identifies instrumentation and an instrument loop number monitored to ensure MIC containment, which is included by reference in the FSA and summarized in the FSP.
BC-D06-001	Copies of audits and/or inspections conducted by FM Global on the Methomyl/Larvin unit for the last 5 years. This response should include recommendations, action items and follow-up.	Copies of audits and/or inspections conducted by FM Global on the Methomyl/Larvin unit for the last 5 years. This response should include recommendations, action items and follow-up.	CSB01163- CSB01266D	CSB01168, CSB01171-CSB01172, CSB01174, CSB01180, CSB01184, CSB01190, CSB01202-CSB01203, CSB01205, CSB01210, CSB01222, CSB01224, CSB01230, CSB01234, CSB01236, CSB01239, CSB01248- CSB01249, CSB01256, CSB01263, CSB01168, CSB01266B & C	§1520.5(b)(5), (b)(1)(ii) & (a)(3) FM Global Audits identify MIC & Chlorine protective measures, including, e.g., water suppression systems, automated valves, as well as locations of protective measures. These are identified in the PFA, FSA and related documents and summarized in the FSP.

CONTAINS SENSITIVE SECURITY INFORMATION. This document contains information that, if disclosed, could result in the identification, location, or movement of personnel, equipment, or facilities of the Department of Energy. This information is exempt from public release under the provisions of 5 U.S.C. 552(a)(1)(C) and 18 U.S.C. 793(e). This information is controlled under the provisions of 10 CFR 835.401 and 835.402.





SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D07-003	Siemens' control system change log that documented all changes, additions and deletions in the Siemens' system for the Methomyl process from 8/21/08 through 8/30/08, including the time and date of all compilations. This response should include a document or key that specifically identifies equipment names, functions and acronyms/initials if they are used in the log.	Siemens' control system change log that documented all changes, additions and deletions in the Siemens' system for the Methomyl process from 8/21/08 through 8/30/08, including the time and date of all compilations. This response should include a document or key that specifically identifies equipment names, functions and acronyms/initials if they are used in the log.  (CD containing electronic data)	CSB01675- CSB01676	SSI is on the CD labeled CSB01676 within the electronic files identified below:  SSI Meth_20080822 (p. 1) SSI Meth_20080823 (p.1) SSI Meth_20080824 (pp. 1 - 7) SSI Meth_20080825 (pp. 1 - 5) SSI Meth_20080827 (p. 1) SSI Meth_20080828 (p.2 - 3) SSI Meth_20080829 (p. 1)	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3)  This series of files marked as SSI reflect changes in instrument positions on equipment that processes MIC. The files identify by name and instrument loop number the specific instruments that control against a catastrophic release of a critical chemical asset. This instrumentation is included in the PHA, the FSA and related documents and summarized in the FSP.
BC-D07-004	A copy of the Siemens' Operator Matrix for the Methomyl and Larvin processes.	Attached is an electronic copy (CD) of the Operator Matrix for the Methomyl and Larvin processes. Also, an oversized copy of the Matrix was provided to the CSB by Connie Stewart.	CSB01808- CSB01809	SSI is on the CD labeled CSB01809 within the electronic files identified below:  SSI MOM_OMx1.2x2.PDF SSI MOM_OMx1.PDF	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3)  Operations & Safety Matrices are part of the process automation designed to protect critical chemical assets. Matrices are included in the FSA and related documents and summarized in the FSP.
BC-D07-009	Copy of daily notes attached to E-Log from Aug. 21--Aug. 30th 2008. These were referenced in Jeff Schneider's interview on 9/23/08 as word document attachments to the E-log.	A copy of the daily notes attached to the E-Log from August 21 through August 30th 2008. These were referenced in Jeff Schneider's interview on 9/23/08 as word document attachments to the E-log.	CSB01588- CSB01603	CSB01589, CSB01592, CSB01595 & CSB01598	§ 1520.5(b)(5) & (a)(3)  These notes identify frequency and timing of MIC transfers in the MoM Unit. The timing and frequency of transfers of MIC is SSI in the FSA and related documents.

SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
Verbal	Copy of slides from the BCS presentation re: Training and Operations	Copy of slides from the BCS presentation re: Training and Operations	CSB01630- CSB01666	CSB01645, CSB01646, CSB01654, CSB01656 - CSB01659	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3) The labeled slides identify COPs, which include SSI about vulnerabilities associated with critical chemical assets and measures designed to protect against those vulnerabilities. The COPs are included in the FSA and related documents and summarized in the FSP.
BC-D08-004	Screen shots of all Methomyl process overview screens designed for 1B Operators.	Screen shots of all Methomyl process overview screens designed for 1B Operators.	CSB01817- CSB01821  CSB02041 & CSB00798	CSB01818 & CSB01820	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3) These drawings depict instrumentation and other measures intended to protect against catastrophic releases of a critical chemical asset, which are included in the FSA and related documents and summarized in the FSP.

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SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D08-005	Siemens DCS data that recorded valve position status of so-equipped valves on Methomyl Unit equipment including up & downstream of the MSS column electronically in xls. file format. Please include logged data on an hourly basis from Aug. 25th to Aug. 27th 2008, & at highest data collection frequency available from Aug. 27th to 0300 hours on Aug. 29th, 2008.	Siemens DCS data that recorded the valve position status of so-equipped valves on all Methomyl Unit equipment including up and downstream of the MSS column electronically in Microsoft Excel (xls. file format). Please include all logged data on an hourly basis from August 25th to August 27th 2008, and at the highest data collection frequency available from August 27th to 0300 hours on August 29th, 2008. (Provided Electronic also).	CSB01956- CSB01980	CSB01957-CSB01980	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3)  The data in this response identifies how the MIC Tk is instrumented to prevent a catastrophic release of MIC, including identification of valve names and locations. The valving and instrumentation on this vessel, which contains a critical chemical asset, are identified in the PHA, which is included in the FSA and related documents. And summarized in the FSP.
BC-D09-001  BC-D09-002	Copy of the Siemens Operating Safety Matrix for MoM and Solvent Recovery processes, including residue treatment equipment.  Copy of COP Matrix for the Methomyl and Solvent Recovery processes, including the residue treatment equipment.	A copy of the Siemens Operating Safety Matrix for the Methomyl and Solvent Recovery processes, including the residue treatment equipment.  A copy of the Critical Operating Parameters (COP) Matrix for the Methomyl and Solvent Recovery processes, including the residue treatment equipment. (Provided by CD)	CSB02037- CSB02038	CSB02038	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3)  Operations & Safety Matrices are part of process automation designed to protect critical chemical assets. Matrices are included in the FSA and related documents and summarized in the FSP. COP's contain SSI about vulnerabilities associated with critical chemical assets and measures designed to protect against those vulnerabilities. The COP's are included in the FSA and related documents and summarized in the FSP.

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SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D09-003	Any and all video camera footage containing any direct or indirect images (e.g., light flashes from the explosion or fire) of the West Carbamoylation Complex incident. Video footage should begin at 1800 hours on August 28 <sup>th</sup> 2008 to 0200 hours on August 29 <sup>th</sup> 2008.	Any and all video camera footage containing any direct or indirect images (e.g., light flashes from the explosion or fire) of the West Carbamoylation Complex incident. Video footage should begin at 1800 hours on August 28 <sup>th</sup> 2008 to 0200 hours on August 29 <sup>th</sup> 2008.	CSB01981- CSB01984	CSB01981 – CSB01984	§ 1520.5(b)(1)(ii), (b)(5) & (a)(3) The marked videos were recorded from the Plant's closed circuit cameras, which were installed for security to protect against threats to critical chemical assets. The videos also depict safety measures designed to protect critical assets, reveal what the cameras target and what can and cannot be seen by the video cameras, all of which is SSI. The use and location of these cameras are identified in the FSA and related documents and summarized in the FSP.
BC-D09-004	Video camera footage recorded on the Methomyl/Larvin unit camera that was disabled before the incident on August 28, 2008. Response should include 4 hrs of recorded video prior to the time it was disabled. Also include all documentation associated with the disabling this camera e.g., the person who disconnected camera, data and time of disconnection, purpose, and authorizations.	Cover Letter response 12/23/08	CSB02216	CSB02216	§1520.5(b)(1)(ii), (b)(5) & (a)(3) The cover sheet (i.e., the language of the request from the CSB) identifies the existence of a video camera in the MoM/Larvin Unit, which was installed for security to protect against threats to critical chemical assets. The use and location of such cameras are identified in the FSA and related documents and summarized in the FSP.

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SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D10-004	Copy of the BCS incident report for the exposure involving MIC equipment work in late Sept., '08. Include with this response all associated procedures or protocols for work involving process line/equipment opening, particularly on equipment containing MIC.	A copy of the Bayer CropScience incident report for the reported worker exposure involving the MIC equipment work in late September, 2008. Include with this response all associated procedures or protocols for work involving process line/equipment opening, particularly on equipment containing MIC.	CSB01993- CSB02014	CSB01996 - CSB01997	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3)  The Fact List in the marked report identifies measures designed to protect MIC, which are included in the PHA, the FSA and related documents and summarized in the FSP.
BC-D10-005	SAP maintenance requests and work orders for the Methomyl process equipment from 0000 hours August 18 <sup>th</sup> to 0000 hours August 29 <sup>th</sup> 2008. This response should include open, closed, and not converted requests and work orders.	SAP maintenance requests and work orders for the Methomyl process equipment from 0000 hours August 18 <sup>th</sup> to 0000 hours August 29 <sup>th</sup> 2008. This response should include open, closed, and not converted requests and work orders. (Provided on a CD)	CSB02028- CSB02029	SSI is on the CD labeled CSB0209 within the electronic files identified below:  DC-B10-005-1st (pp. 19-21, 29-33)  DC-B10-005-2nd (pp. 6-16, 26-32)  DC-B10-005-4th (pp. 25-31)	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3)  The marked maintenance requests identify instrumentation and equipment intended to protect against catastrophic releases of critical chemical assets, including an analyzer, chiller & transfer equipment, which are included in the PHA, FSA and related documents and summarized in the FSP.

This document contains information that is exempt from public release under 5 U.S.C. 552, b(7)(F). The information is being disclosed to you in accordance with the provisions of the Freedom of Information Act (5 U.S.C. 552). This information is being disclosed to you in accordance with the provisions of the Freedom of Information Act (5 U.S.C. 552). This information is being disclosed to you in accordance with the provisions of the Freedom of Information Act (5 U.S.C. 552).

SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D10-006	<p>A detailed description of the safeguards and procedures used to prevent or mitigate an MIC release involving any MIC equipment installed on or near the Mithomyl/Larvin unit. Information shall include but not be limited to maximum inventories, emergency dump tanks, deluge systems, spill containment, refrigeration systems, backup power systems, and area detection alarms. Include a copy of the most recent PHA, and all emergency procedures and KPEIPC communications and coordination protocols.</p>	<p>Attached is the '04 MoM PHA, which identifies safeguards/procedures to prevent/mitigate releases. Operation of those safety measures is described in detail in the SOP, in response to Req. 1 Item 5. Additional detail re: prevention program was provided in the Site Risk Management Program in response to Req 1-4. Safe work procedures are designed to minimize potential for chemical release when performing maintenance. Work on equipment with MIC requires Class A permit, the most stringent permit. Safe Work Permit &amp; LO/TO procedures are attached. Also see the Emergency Response Manual.</p> <p>Supplemental Response: Appendix H to 2004 PHA (on re-produced CD)</p>	<p>CSB02163 -- CSB02208</p>	<p>CSB02163, CSB02175-CSB2189, CSB02191 - CSB02207</p> <p>SSI is also on the CD labeled, CSB02208 at the following pages:</p> <p>1- 2, 6-9, 18, 20-21, 28, 30, 33, 45, 68-69, 77, 79, 81-83, 97-98, 102-103, 122-123, 125-126, 130-131, 137-140, 143, 146, 148-155, 157, 160-163, 165-167, 197-205, 264-266, 270-272, 279-280, 287-290, 321-322, 326-327, 336-338, 341, 351, 355, 357 &amp; 366</p>	<p>§ 1520.5(b)(1)(ii), (b)(5) &amp; (a)(3)</p> <p>The labeled procedures (Class A Safe Work procedures and Emergency Response procedures) are SSI included in the FSA, and, with respect to the Emergency Response procedures, also in the FSP. The referenced pages of the PHA identify vulnerabilities associated with critical chemical assets and measures designed to protect against those vulnerabilities. The PHA and the protective measures detailed in the PHA are included in the FSA and related documents and summarized in the FSP.</p>

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SENSITIVE SECURITY INFORMATION

REQUEST #	DESCRIPTION OF REQUEST	DOCUMENTS PRODUCED	BATES RANGE	PAGES CONTAINING SSI	49 CFR
BC-D10-007	DCS data showing the MIC day-tank (Methomyl/Larvin/FMC) inventory from 0000 hours August 27, 2008 through 0000 hours August 29, 2008. Include the conversion factor(s) as necessary to calculate the actual MIC quantity in pounds.	Provided in electronic format on CD	CSB02047- CSB02048	CSB02048	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3)  The marked data reflects inventory of a critical chemical. Also, the volume data over a period of time reflects transfer strategies (e.g., times of day at which MIC is transferred and quantities used at various times during the process). Such information about MIC volume management and transfer strategies are included in the FSA and related documents and summarized in the FSP.
BC-D10-008	Documentation of the max daily MIC inventory, in pounds contained in storage tanks located at the MIC production unit.	The CSB has sufficient data regarding MIC storage volumes from Institute Plant's most recent RMP Submission, which was produced to the CSB in response to Req. 1, Item 4. However, pursuant to previous discussions with John Vorderbrueggen, in lieu of specific maximum daily MIC inventory in the storage tanks in the MIC production Unit, we will provide to the CSB a document detailing the design specifications and calculations for the blast mat that surrounds the MIC day tank located immediately south of the C-2565 residue treater in the MoM Unit.	CSB02046	CSB02046	§ 1520.5(b)(5), (b)(1)(ii) & (a)(3)  The cover sheet identifies the existence of a measure of protection for a critical chemical asset (i.e., the blast mat on the MIC Day Tank). This protective measure is included in the FSA and related documents and summarized in the FSP.

THIS DOCUMENT CONTAINS SENSITIVE SECURITY INFORMATION THAT IS EXEMPTED UNDER 49 CFR PART 1520. THE REST OF THIS DOCUMENT IS NOT EXEMPTED BY THIS NOTICE. FOR DELETED OR REDACTED INFORMATION, SEE THE ORIGINAL DOCUMENT. THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE. FOR MORE INFORMATION, CONTACT THE NATIONAL ARCHIVE AT 866.835.2536.